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Projectile Kinetic Energy Reduction System (PKERS)

And

Netcentric Sensor Delivery Platforms

Presented

At the

39th Annual Guns and Ammunition

Missiles and Rockets

April 13-16, 2004

Thomas C. Welty, PKERS Project Manager

United Defense LP

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PROJECTILE KINETIC ENERGY REDUCTION SYSTEM

Discussion Outline:

- **Design Attributes**
- **Deployment Methods**
  - Subsonic
  - Supersonic
- **Applications**
- **Netcentric Sensor Delivery**
- **Testing**
  - Aerial Drops
  - NASA Langley Research Center
- **Focus**
- **Rapid Prototyping**
- **Summary**

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PROJECTILE KINETIC ENERGY REDUCTION SYSTEM

PKERS:

- Is a platform independent payload delivery system.
- Can be released from aircraft or launched from large caliber cannons or mortars.
- Is a modular design that can be easily integrated with strategic payloads and launchers.
- Descent velocities can be tailored to achieve survivable landings or specific requirements.

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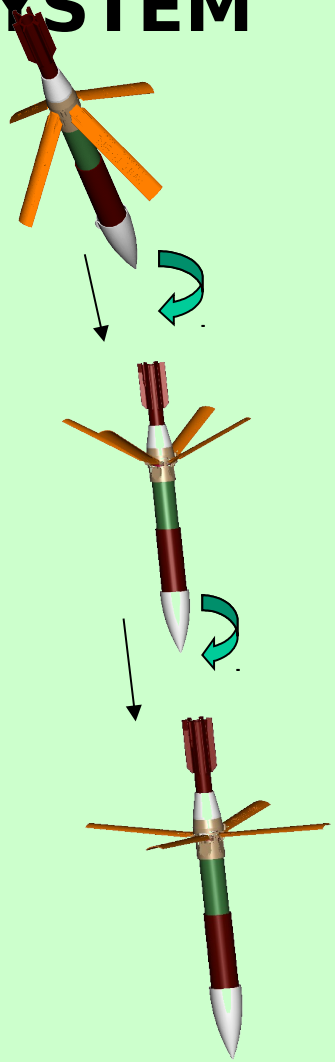
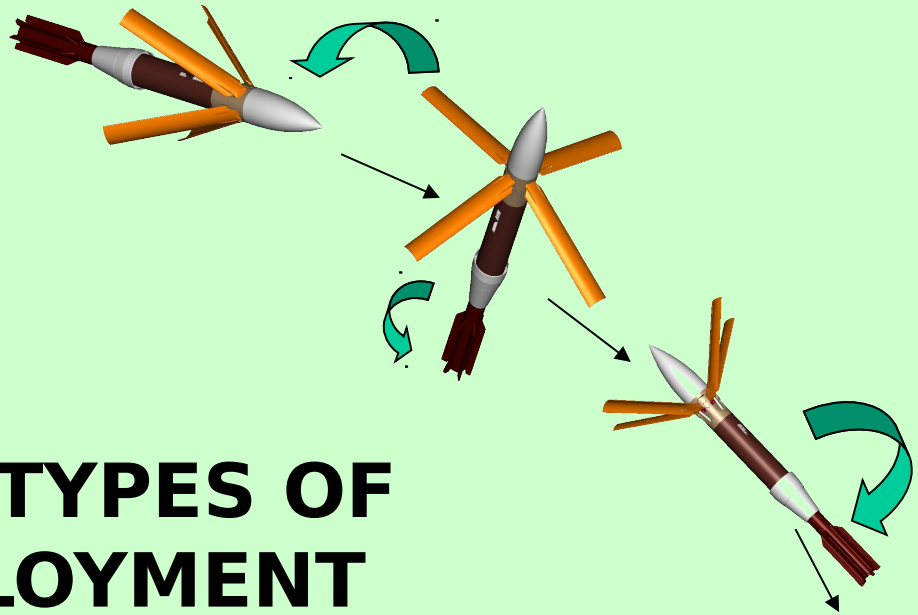
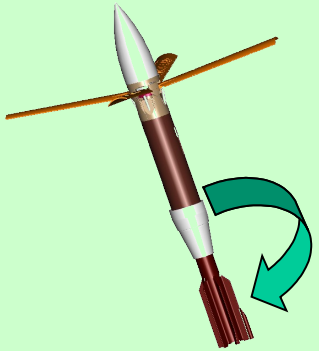




TWO TYPES OF DEPLOYMENT

SUBSONIC

SUBSONIC AND SUPERSONIC



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PROIECTILE KINETIC ENERGY REDUCTION

LAND, AIR AND SEA USE

MULTIPLE METHODS AND USES:

- ILLUMINATION (White and Infrared)
- AREA DENIAL (Land and Sea)
- HYDROPHONE (Advanced Warning)
- AIRBORNE AND SURFACE WEATHER CONDITIONS
- -POTENTIAL GUIDED DESCENT FLIGHT
- UAV SIGNAL REPEATER
- SONOBUOYS (Advanced Warning)
- NASA INSTRUMENT LANDER
- POTENTIAL ARMOR AND PERSONNEL DEFENSE
- POTENTIAL POWE "SILENT STATION KEEPING

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EXTENDED APPLICATIONS:

- VEHICLE AND PERSONNEL SENSORS
- UAV REPEATER STATIONS
- AREA DENIAL
- NON-LETHAL
- UNATTENDED GROUND SENSORS

AIRFORCE HIGH ALTITUDE AIR DROP SENSORS

“SILENT

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PROJECTILE KINETIC ENERGY REDUCTION SYSTEM

SYSTEM POTENTIAL

USES:

- Unattended Ground Sensors for base perimeter control.
- Illumination IR and White light rounds.
- Top attack munitions
  - Thermobaric munitions
  - EMP munitions
  - Shaped charges
- Reconnascence and Surveillance.
  - RF seekers
  - Intelligence
- Battle Damage Assessment

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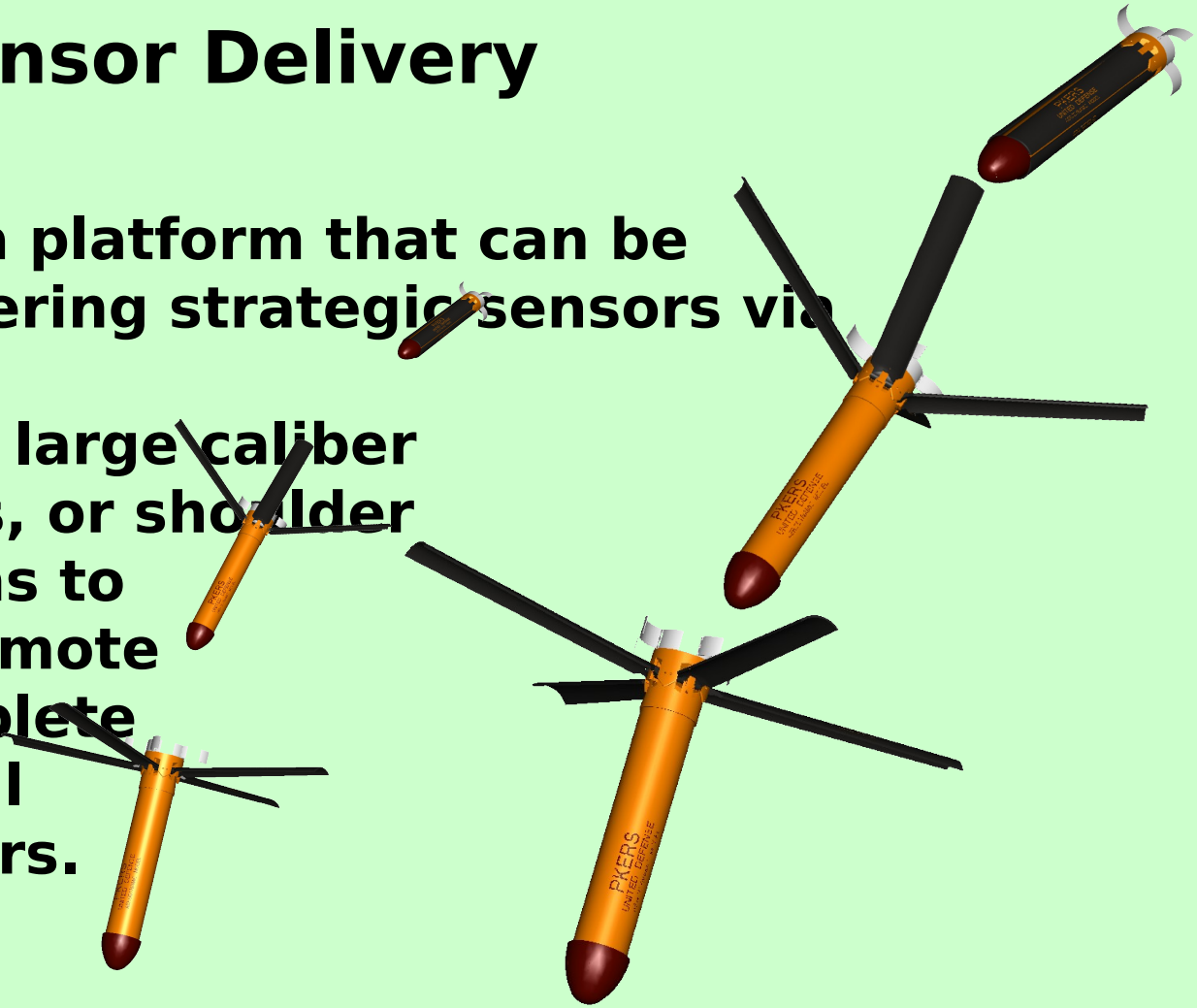
Netcentric Sensor Delivery Platform:

PKERS provides a platform that can be tailored for delivering strategic sensors via aircraft or launched from large caliber cannons, mortars, or shoulder launched weapons to uninhabitable, remote locations to complete a seamless digital network of sensors.



PKERS NETCENTRIC SONOBUOY

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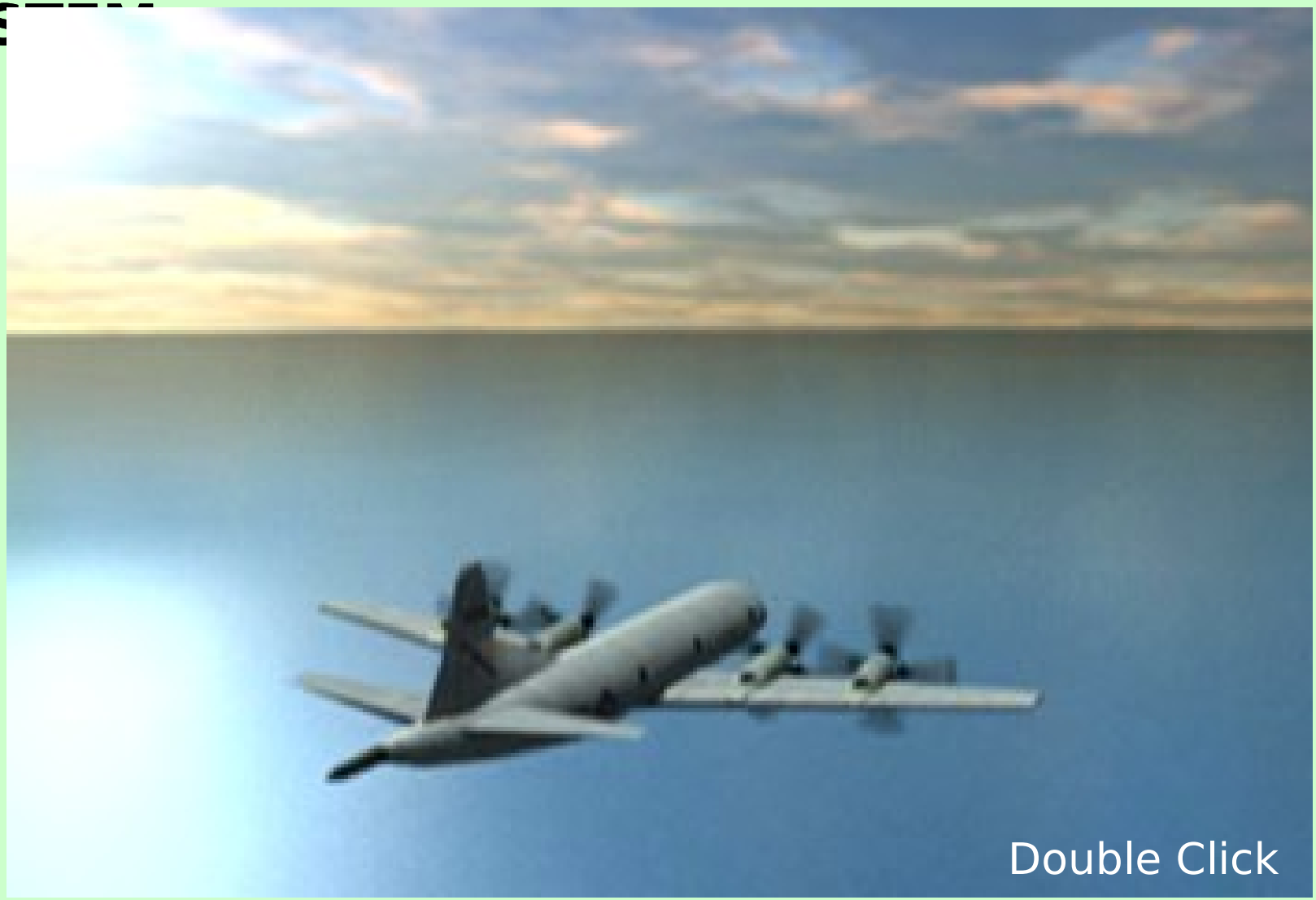
PROJECTILE KINETIC ENERGY REDUCTION SYS



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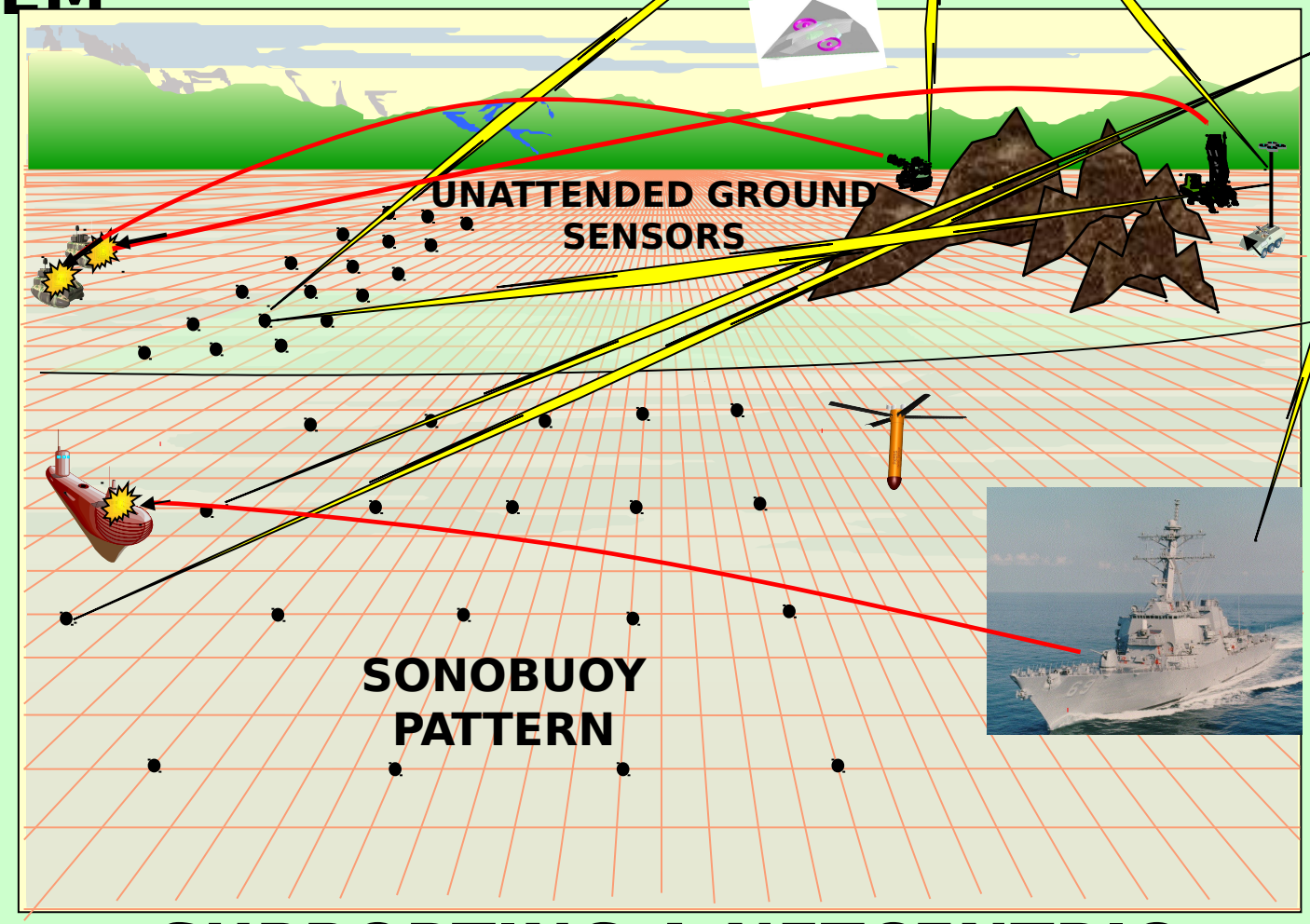

SUPPORTING A NETCENTRIC NETWORK

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Testing:

Aerial Drops

- Stable flight
- Rotor deployment and functionality
- Minimal wind drift
- Rapid prototype test hardware

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Testing:

- **Wind Tunnel Testing has been accomplished for:**

  -Terminal Velocity – Is mass dependent and can be tailor to customer applications and needs.

  -Spin Rate - Between 215 and 900 Rpm for various applications tested.

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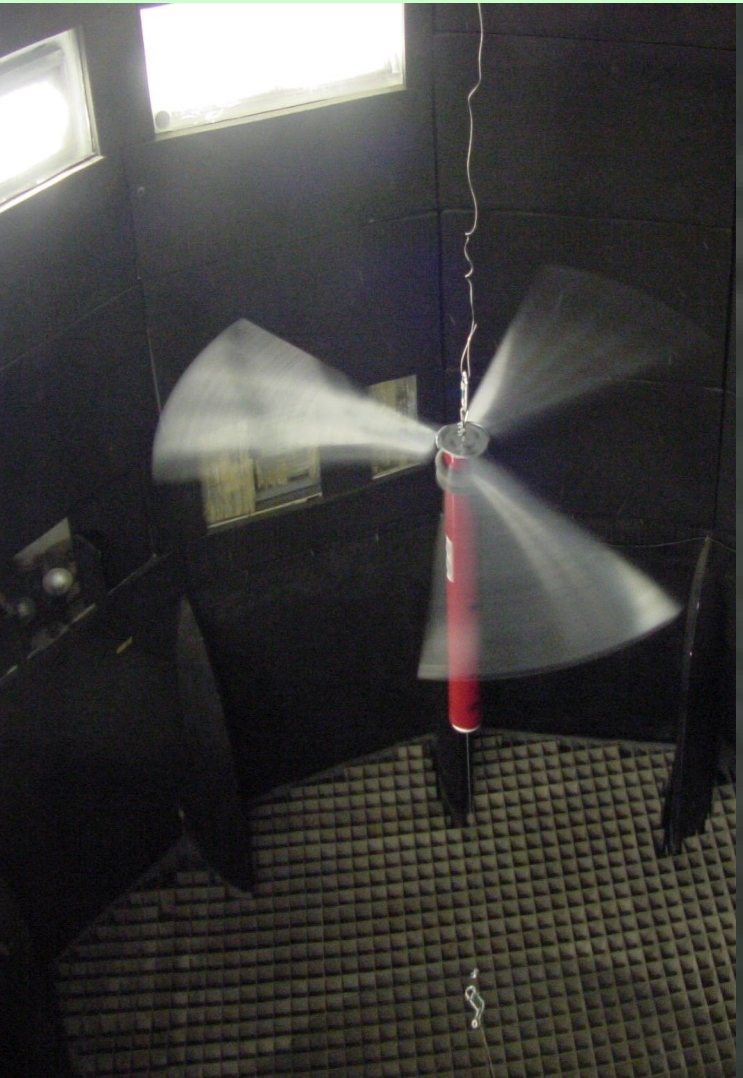
PROJECTILE KINETIC ENERGY REDUCTION SYSTEM TESTING AT NASA LANGLEY RESEARCH



Double Click

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Talley Defense Systems

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PROJECTILE KINETIC ENERGY REDUCTION SYSTEM TESTING AT NASA LANGLEY RESEARCH CENTER

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PROJECTILE KINETIC ENERGY REDUCTION SYSTEM

Talley Defense and United Defense L.P.

Double Click Window

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PROJECTILE KINETIC ENERGY REDUCTION SYSTEM

Focus:

- Shoulder Launch SMAW
- Develop Flight Control
- 6- DOF Modeling
- Payload Integration
  - Sensors
  - Imagers
  - Communications

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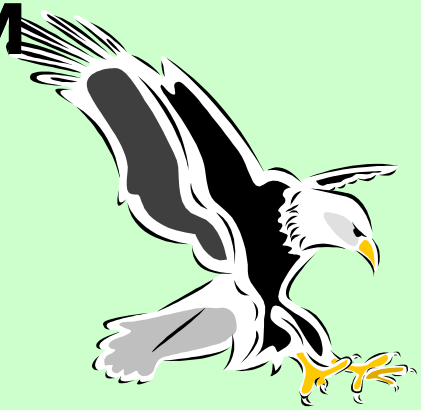

PKERS HAS BEEN DEVELOPED ENTIRELY USING <u>RAPID PROTOTYPING</u> AND <u>DESIGN FOR MANUFACTURING TECHNIQUES</u>

NO HARD TOOLING USED

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SUMMARY

PKERS:

- Is a platform independent payload delivery system
- Can be integrated with existing launch systems
- Can be tailored for specific missions and flight characteristics
- Can increase dwell time over targets or areas of interest
- Is a platform for strategically delivering payloads supporting a Netcentric Network

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QUESTIONS?